REMARKS

Claims 1-5 and 8-22 are pending upon entry of this amendment. Claims 9-22 are allowed. Claims 6 and 7 have been cancelled. Claim 1 has been amended. No new matter has been presented.

Claims 1-8 stand rejected under 35 USC 103(a) as being unpatentable over Oster in view of Fukunaga.

Claim 1, as amended, requires (1) compressive strained InGaAsP well layer(s), (2) tensile strained InGaAsP barrier layers that have a band gap energy larger than that of the well layer(s), and (3) AlGaAs guide layer(s), where each of the AlGaAs upper and/or lower guide layers interface with an adjacent tensile strained barrier layer, and upper and lower surfaces of each well layer interface with an adjacent tensile strained barrier layer. These features are not taught or suggested by a combination of Oster and Fukunaga.

The Examiner asserts that Oster substantially discloses the claimed invention except that Oster discloses GaAsP barrier layers instead of InGaAsP barrier layers, as required by the claimed invention. To overcome this deficiency, the Examiner relies on Fukunaga and asserts that a person of ordinary skill in the art would have replaced the barrier layers of Oster with the InGaAsP barriers of Fukunaga to achieve the claimed invention. Applicants respectfully disagree.

The combination of Oster and Fukunaga fails to disclose or suggest the claimed arrangement of InGaAsP barrier layers with InGaAsP well layer(s) and AlGaAs guide layer(s). In the semiconductor devices of Oster and Fukunaga, the band lineup at the guide layer/barrier layer interface and the band lineup at the barrier layer/well layer interface are very important to achieve specific device characteristics. Accordingly, the specific material composition of the guide layers, the barrier layers and the well layer(s) is important to obtain the desired band lineups. Oster discloses introducing tensile strained GaAsP barrier layers in arrangement with an InGaAsP well layer and AlGaAs guide layers. Oster, p. 631, Section II(A) and Table I. Fukunaga discloses

tensile strained InGaAsP barrier layers disposed in arrangement with an InGaAsP well layer and InGaAsP guide layers. Fukunaga, col. 4, lines 54-62. The GaAsP barrier layer of Oster cannot be replaced with the InGaAsP barrier layer of Fukunaga unless the AlGaAs guide layer of Oster is also replaced with the InGaAsP guide layer of Fukunaga, and vice versa. A person of ordinary skill in the art would not have modified the barrier layer of Oster according to the teachings of Fukunaga without modifying the guide layers and well layer of Oster in accordance with the same teachings in order to keep the band lineup consistent. There is no disclosure or suggestion in either Oster or Fukunaga that InGaAsP barrier layers would maintain the desired band lineup in arrangement with AlGaAs guide layers. Accordingly, the combination of Oster and Fukunaga fails to teach or suggest the claimed invention.

Furthermore, a combination of Oster and Fukunaga fails to disclose or suggest the claimed arrangement of compressive strained InGaAsP well layer(s) and tensile strained InGaAsP barrier layers, as recited in claim 1. Oster discloses introducing the GaAsP barrier layers in order to compensate for the compressive strain from the well layers and the guide layers. In contrast, Fukunaga discloses the tensile strained InGaAsP barrier layers 4 and 6 provided with the InGaAsP well layer 5 of no strain or tensile strain. Fukunaga, col. 4, lines 54-62. There is no teaching or suggestion in Fukunaga that the tensile strain of InGaAsP barrier layers, as shown in Fukunaga's device, can or should be adjusted to compensate for the compressive strain of well layers and guide layers, in particular where the material composition of the guide layer is different from the composition used in Fukunaga's device. Accordingly, the asserted combination would not disclose or suggest the claimed arrangement of the compressive strained InGaAsP well layer(s) and tensile strained InGaAsP barrier layers, as recited in claim 1.

Accordingly, claim 1 is allowable. Claims 2-5 and 8 depend from claim 1 and are similarly allowable.

In view of the above, each of the claims in this application is in condition for allowance.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **204552028900**.

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Respectfully submitted,

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